

Sika Sarnafil

World Class Roofing and Waterproofing

ROOFING TECHNICAL BULLETIN

#08-12

To: Authorized Roofing Applicators
Sika Sarnafil Sales Staff & Sales Representatives
Sika Sarnafil Regional Technical Staff
Sika Sarnafil Customer Service Staff
Sika Sarnafil Services Staff
Sika Sarnafil Marketing
Roofing Consultants

From: Sika Sarnafil Technical Service Department

Date: December 19, 2012

Subject: Changes to Factory Mutual Approval Ratings for Steel Deck Applications

Factory Mutual Global has revised their Approval Standard 4470, "Single Ply, Polymer-Modified Bitumen Sheet, Built-Up roof (BUR) and Liquid Applied Roof Assemblies for use in Class I and Noncombustible Roof Deck Construction", which will have a tremendous impact with the Roofing industry. FM Global has concern that the mechanically attached assemblies being installed may overstress the steel decks. For this reason FM will now look at both actual uplift test data as well as mathematical analysis to insure the assembly does not exceed the deck's allowable stresses based on the latest version of the North American Specification for the Design of Cold Formed Steel Structural members, AISI S 100-2007.

FM Approvals will review all steel deck assemblies to determine which currently approved assemblies "have the potential" to overstress the deck. After identifying the presumed overstressed assemblies, FM Approvals will make the following changes to RoofNav assemblies affecting one or all of the following construction attributes;

Increase the steel deck thickness/gauge (22, 20, 18),

Increase the tensile strength of the steel from 33 ksi to 80 ksi,

Decrease the spacing of the deck span from 6 ft to 5 ft or 4 ft, if needed.

This means new RoofNav assemblies will be created, with the original versions removed. This will have significant impact in the industry, the most important of which in the short term will be an issue for projects bid/awarded this year and starting after the revisions take place.

Factory Mutual is expecting to have the changes in effect on 12/31/2012



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As an example; Our ₁₀S327 membrane (114" row spacing) fastened with the XP/XPN at 6 inches on center over a 22 gauge steel deck currently has a 120 PSF rating. With the new rules this system will be downgraded to a maximum of a 90 PSF rating over an 80 ksi steel deck and will not be allowed with a 33 ksi steel deck.

To achieve a 90 PSF rating over a 22 gauge, 33 ksi steel deck with a 6 ft span, the maximum fastener row spacing will be 6 feet, membrane width of 6.5 feet.

FM will review approved assemblies and may offer some variations in order to achieve the uplift ratings, such as:

- Requiring a thicker/heavier steel deck, using a 20 ga instead of a 22 ga

- Changing the tensile strength of the deck from 33 ksi to 80 ksi

- Change the distance between structural spans

Any of the changes noted will only affect new construction. With re-roofing and re-covers these aspects cannot be changed.

The new requirements will also affect adhered applications on steel decks, both new construction and tear-off. The maximum ratings that will be allowed for an adhered application with a 22 gauge, 80 ksi steel deck will be 300 PSF and with 33 ksi steel deck only 165 PSF

Effects to the Roofing Industry

Following the revised FM Standard 4470 will increase the cost to the building owner as the narrow sheets will require more additional labor and material. **The uplift requirements for each FM insured project should be calculated as opposed to specifying the generic 1-90 rating. Most buildings in North America only require a 1-60 rated system.**

We have not received any guidelines from FM Global as to how a project being bid or awarded prior to the 12/31/2012 revision will be handled or addressed by the FM global field engineers. We suggest that all parties involved with any FM insured project that will start after 12/31/2012, be informed of the changes to FM 4470, including the building owner, architect, general contractor, consultant, etc. For FM insured projects consider printing a Contractor Package (PDF format) from RoofNav that is dated, as this information may not be available after 12/31/2012.

We recommend that the owner, designer and/or roofing contractor contact the FM Global field office that is responsible for the project and review the application, asking for their confirmation of the assembly.



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New FM Uplift Limitations for Steel deck applications

Maximum uplift in PSF

Fastener row spacing (feet)	33 ksi steel	80 ksi steel	Highest value Sika Sarnafil 33 ksi/80 ksi	
3.5	135	255		<p>Adhered applications will be limited to a maximum uplift rating of 165 PSF for 33 ksi decks and 300 PSF for 80 ksi decks based on 6 ft spans. Rhinobond applications will be considered similar to adhered applications as long as the fastener spacing is < or = to 1/2 of the deck span</p>
4	135	255		
4.5	120	240	150/225	
5	120	210		
5.5	105	195		
6	90	165	90/165	
6.5	75	150		
7	75	150		
7.5	75	135		
8	60	120		
8.5	60	105		
9	NA	90		
9.5	NA	90	90/150	
10	NA	75		
10.5	NA	75		
11	NA	75		
11.5	NA	75		
12	NA	60		

